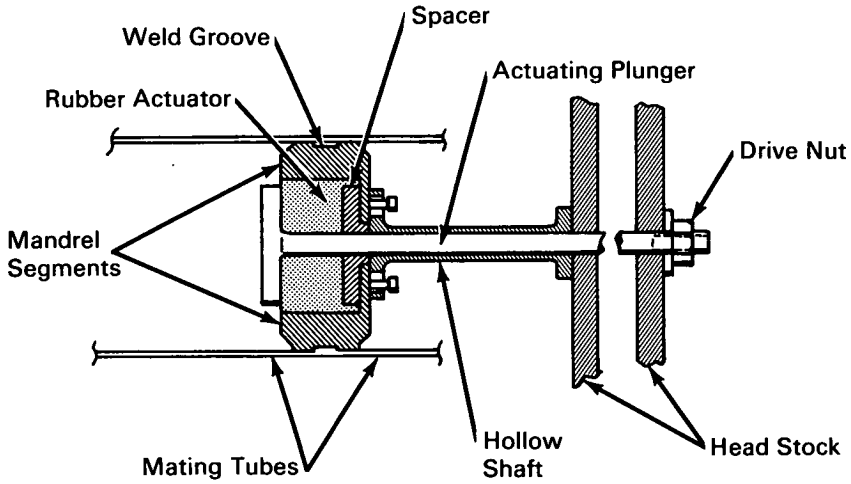
NASA TECH BRIEF

Special Mandrel Permits Uniform Welding of Out-of-Round Tubing



The problem:

To provide uniform weld bead chilling in the machine welding of circumferential seams on tubing or cylinders that are out of round.

The solution:

A segmented, expandable mandrel that achieves close contact with the inner walls of the out-of-round tubes by the independent expansion of each segment.

How it's done:

The assembly is installed on the headstock and secured by slight tightening of the drive nut. Two mating tubes are positioned on the mandrel with their point of juncture aligned with the center of the weld groove on the mandrel segments. Further tightening of the drive nut pulls the actuating plunger through the hollow shaft, thus compressing the heat resistant rubber actuator between the actuating plunger and the spacer. This causes radial expansion of the rubber actuator and forces the individual mandrel segments into intimate contact with the inner walls of the mating tubes.

Notes:

1. Various sizes of tubing may be welded with this method by substituting different mandrels and rubber actuators.
2. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B66-10323

(continued overleaf)

Patent status:

No patent action is contemplated by NASA.

Source: Edwin L. Whiffen, Martin E. D'Or,
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under contract to
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(M-FS-706)